

ABSTRACT

A circularly welded joint featuring excellent fatigue strength obtained by welding the ends of two pieces of steel plates perpendicularly together and used for the welded structures such as buildings, ships, bridges, construction machinery and off-shore structures, a method of producing the circularly welded joints and a welded structure using the circularly welded joints are provided. A circularly welded joint is obtained by welding the ends of two pieces of steel plates perpendicularly together. Between the two pieces of the steel plates, at least the steel plate on the side on which the main stress is exerted is one that suppresses the propagation of cracks due to fatigue and, preferably, one having the compressive residual stress in the surface layer of the steel plate. When the thickness of the steel plate is denoted by t , the residual stress in the direction of main stress is the compressive residual stress over a range of not smaller than $t/10$ or not smaller than 3 mm in the direction of plate thickness from the circularly welded surface of the steel plate.